

An Abnormal Balsam Fir

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Unusual growth forms of trees are of interest to the cytologist and the geneticist as well as to the general botanist. Some atypical forms have commercial or horticultural value, others are mere curiosities. Among the Pinaceae, variations are usually minor and mostly concern twig placement and foliage color.

W. H. Bennett has reported (*Quarterly Journal of Forestry*, **30** (1): 133-134, 1936) on a Norway spruce which, for four seasons after planting, produced normal lateral branches; then, for the succeeding six years (up to the date of writing) grew a single, branchless, upright stem. No explanation for the phenomenon is suggested.

During a recent field trip, my associate, Mr. Stacy B. Robeson of Plattsburg, N. Y., showed me an unusual specimen of balsam fir (*Abies balsamea* (L.) Mill.) on Valcour Island in Lake Champlain. The tree is growing at the east edge of a woods of white spruce, white cedar and fir, on thin soil underlain by limestone. This specimen is abnormal in that there is no indication that lateral buds have ever been produced. As a result, the tree is *entirely devoid of branches*. At the end of the 1944 growing season, the total height of this single, branchless stem was 85 inches. The diameter just above the ground was 0.54 inches; at the base of the 1944 internode, 0.32 inches. The nodes are marked by distinct ridges in the bark and by a frill of needles, when present. They indicate a total age of 20 years. The longest internode (1939) is 8.5 inches, that of the 1944 season 5.6 inches. The 1936 internode is the oldest one still bearing needles. The distribution of foliage is the same as that on normal leaders. Needles are of normal length but *strongly keeled* and with a *pointed* tip. The terminal bud is bluntly conical and as big as the end of the leader.

Considering the small amount of foliage, height growth is good. But diameter growth is deficient and the stem is so slender that it does not stand erect, as will be seen in the accompanying figure.

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An abnormal balsam fir. Valcour Island, N. Y., 1944.